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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE • DECEMBER 11, 1943

TECHNOLOGY DEPT.

DEC 16 1943

Baby Volcano

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A SCIENCE SERVICE PUBLICATION

Helping the tire maker: Pictured here is a laboratory model of the new Westinghouse-developed "mass spectrometer," an adaptation of which analyzes gases with incredible swiftness and accuracy. Right now, one of the most important of its many uses is speeding up tremendously a step in the making of synthetic rubber.

Westinghouse research accepts every wartime challenge . . .

Under the spur of war, Westinghouse research is delving into numberless mysteries, not only in the vast field of electricity and electronics, but also in chemistry, physics, metallurgy, plastics. And as a result, out of the great Westinghouse laboratories has come a steady stream of new war products, and new and better ways of making old ones.

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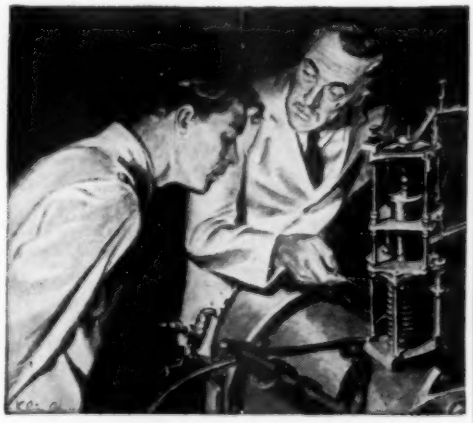
To Westinghouse, each year, come several hundred budding scientists and engineers—to work, to learn, to blaze new trails in electrical research. And each year, through more than 100 Westinghouse scholarships, young men enter America's engineering colleges to develop the native skill and talent that have made America great and will make it greater.



Westinghouse research promises new wonders for peace . . .

You have heard much talk of the marvels science will offer you after the War. Well, there *will* be marvels—plenty of them—and Westinghouse research is working to contribute its full share. But we will never lose sight of what we consider our first duty: seeing that, beyond all question, each Westinghouse product, old *or* new, is the very finest of its kind. Westinghouse Electric & Manufacturing Co., Pittsburgh, Pennsylvania. Plants in 25 cities, offices everywhere.

MEDICINE—PSYCHIATRY

Psychogenic Rheumatism

Symptoms diagnosed as arthritis or allied conditions in 450 soldiers thought to be largely the manifestation of mental or emotional conflicts.

➤ A GOOD MANY persons, laymen as well as physicians, are recognizing more and more that certain disturbances in the digestive system, even including stomach ulcers, may be caused by mental and emotional influences. Relatively few, however, appreciate that the same mental and emotional influences may cause symptoms of arthritis or rheumatism.

"Psychogenic rheumatism" is the name given this condition by Capt. Edward W. Boland and Col. William P. Corr, of the Army Medical Corps. (*Journal, American Medical Association,* Nov. 27)

It was, they report, the most frequent cause of disability in 450 consecutive soldier patients they saw whose condition had been diagnosed as arthritis or allied organic condition before they were admitted to Hoff General Hospital at Santa Barbara, Calif.

Symptoms included backache and pain, stiffness, and a feeling of swelling or limitation of motion in the joints and muscles. In a special study of 50 of these soldiers, the medical officers found in 28 of them no objective evidence of muscle or joint disease; that is, X-ray pictures and various tests failed to show any condition in the joints or muscles that could account for the pain and disability.

The two medical officers do not believe, as some doctors do, that mental and emotional conflicts can cause inflammation of the joints or organic joint disease, such as chronic rheumatoid arthritis. They do believe that in some cases psychogenic rheumatism, besides occurring without organic change, may be superimposed on non-disabling organic changes.

Most of the 50 soldiers who were specially studied had definite signs of mental and emotional conflict before entering military service. Many gave a history of sleepwalking, nightmares, temper tantrums or other symptoms of behavior problems.

These soldiers with psychogenic rheumatism might be mistaken for malingerers. Captain Boland and Colonel Corr state that the comment is frequently heard that many of these patients are malingerers and should be made to return to work.

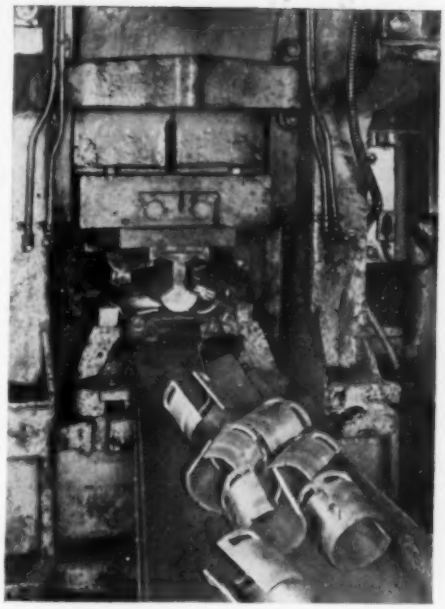
In the soldiers, the psychogenic rheumatism most frequently affected the back or legs. This might represent an unconscious attempt to solve the emotional conflict over military service by developing a disability that would make them unfit for duty and result in discharge from the service. In civilians, psychogenic rheumatism might similarly affect the part of the body representing the kind of work over which there was an unconscious conflict, such as the fingers and hands in a mechanic, typist or seamstress.

This does not mean that the patient is malingering in the true sense of the word, nor does it mean that he should be made to continue with the work.

Malingering, the medical officers point out, involves the conscious feigning or pretending an illness to avoid duty. In the Army it is punishable by courtmartial. In their experience, true malingering has been uncommon in contrast to the frequency with which bodily symptoms "develop unconsciously as a means of escape from the unpleasant things associated with military service."

It is usually difficult for a lay person, and sometimes for a physician to distinguish between true malingering and this unconscious development of symptoms that disable a person for unwanted, difficult or unpleasant work. In or out of the Army, the patient should be seen by a physician specially qualified, by training and experience, to detect the difference between malingering and the unconscious conflicts that cause physical symptoms.

The patient with psychogenic rheumatism, the medical officers point out, needs psychotherapy, not physical therapy, to help him recover. Some of the soldier patients did recover under suitable psychotherapy. Others were found to be emotionally unfit for military service, though with proper treatment they might be able to live successfully as civilians.



STRAIGHT LINES TO CURVES— ***Since seamless steel tubing was impossible to get, engineers at McKinnon Industries Ltd., in Ontario devised the method of making the tubing by bending flat steel stock, welding the ends, then boring out the body. The picture shows the steel being bent into shape after cutting.***

PUBLIC HEALTH

Influenza Increases Suddenly in Four States

➤ A SUDDEN increase in influenza during the week ending Nov. 27 appears in figures reported to the U. S. Public Health Service. Total number of cases for that week, latest on which national figures are available, was 2,462. For the previous week the total was 1,734, and for the last week in November, 1942, the total was 1,854, which was the five-year median figure.

More than one-half the influenza cases in the nation were reported from Texas, where influenza cases have been running high all summer, Minnesota and Virginia. Minnesota reported an increase from one case the week of Nov. 20 to 270 cases the week ending Nov. 27. A similar big jump in cases, from none Nov. 20 to 149 Nov. 27, was reported by Missouri. Cases in South Carolina increased from 295 to 331, in Virginia from 168 to 259.

In spite of the increase in cases, there is said to be no definite indication yet of a widespread epidemic.

ASTRONOMY

Milky Way Thicker

Our wheel-shaped galaxy is surrounded by a fatter spherical haze of stars than astronomers formerly thought, research at Harvard Observatory shows.

➤ WE LIVE in a much fatter and solider galaxy of stars than previously supposed, Dr. Harlow Shapley, director of the Harvard College Observatory, announced in delivering the 22d annual Sigma Xi lecture at the University of Chicago.

The enormous thickness of the Milky Way, the galaxy or "universe" of stars in which the sun and earth are located, is established definitely through a general revision, which has just been completed at Harvard, of the distances of the globular star clusters. No large alterations are found necessary in the diameters of the galaxies, but Dr. Shapley confirms his earlier evidence that our own wheel-shaped galaxy is surrounded by an extensive haze of stars that is approximately spherical in shape.

The overall thickness of the surrounding star haze is found by Dr. Shapley to exceed 100,000 light years; that is, it would take light 100,000 years to cross the galaxy, traveling at its speed of 186,000 miles per second. This is 580,000,000,000,000,000 miles.

We are still located about 30,000 light years from the center of the Milky Way, as the distance calculations made possible by the new researches caused little revision.

"The original determination of distance and distribution of globular clusters led to the abandonment of the heliocentric hypothesis of the sidereal universe since it pointed to the star clouds in Sagittarius as a region around which the globular clusters are aggregated," Dr. Shapley said. "That region was assumed to be the center also for all stars of the Milky Way. The clue given by clusters was later verified by studies of motions of stars around that center, again demonstrating that the sun and earth are in the outer part of the wheel.

"Cosmic dust and gas clouds between Milky Way stars have hindered our direct exploration of the home galaxy and especially prevented measurements of accurate distances for remote objects that are in low galactic latitudes, that is, near the Milky Way circle. But in higher latitudes far from the Milky Way band we escape much of the space-absorption and when more than 20 degrees from the galactic circle we can see through the dust. In those latitudes from 20 degrees to the poles at 90 degrees on both sides of the Milky Way, we can now safely measure positions of globular clusters.

"One test for transparency of space is through measuring colors of remote objects. If there is reddening or color excess over normal for average stars we suspect presence of absorbing dust and gas in interstellar space. A better test is now provided by external galaxies. If they are present and numerous in the field of globular clusters, space is clear. If absent, they have been blocked out by space absorption. If present but scarce, the transparency is partial."

The determinations of the distances in the Milky Way were made with the help of the Harvard Observatory's extensive surveys of faint and distant galaxies, through the use of the new studies of the magnitudes of variables and giant stars in globular clusters and with new measurements for nearly all globular clusters in latitudes higher than 20 degrees. These researches were reported for the first time by Dr. Shapley.

"The globular star clusters average more than 100,000 times the brightness of the sun," Dr. Shapley said. "When compared with clusters in the neighboring galaxy in Andromeda they appear to be systematically brighter, or more probably they indicate that the distance of the Andromeda nebula is now considerably underestimated."

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CHEMISTRY

Rainbow Colors Obtained In Electroplating

➤ RAINBOW plating is a new term applied to a new process by which a brilliant multi-colored electroplate is obtained from molybdate solutions. The metallic coating of molybdenum, a metal which occurs in nature only in combination, reflects light in brilliant colors much in the same way as a soap bubble. Pure molybdenum itself is silvery white.

The process of obtaining the multi-colored electroplate was explained at the recent meeting of the Electrochemical Society in New York City by Oliver P. Watts of the University of Wisconsin. In his experiments he used an electroplating solution of ammonium molybdate with a little sodium cyanide added. Highly polished surfaces of copper, brass or nickel may be successfully plated.

The same speaker described experiments in electroplating with monel metal as a substitute for nickel. The results were encouraging when a sulfate-citrate-cyanide bath was used.

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MEDICINE

Seasickness Preventive

Two drugs, one an extract from belladonna and the other a synthetic, when combined are found in laboratory tests to keep stomach contractions normal.

➤ A COMBINATION of two drugs which acting together may prevent seasickness has been discovered by Captain Stewart Wolf, M.C., A.U.S., in studies at the Ninth General Hospital, U. S. Army, the Boston City Hospital and Harvard Medical School, and New York Hospital and Cornell Medical College. (*Journal of Clinical Investigation*, November)

The drugs are atropine, the antispasmodic drug extracted from belladonna, and prostigmine, the synthetic drug which has been used in treating the muscle weakness disease, myasthenia gravis.

Neither of these drugs would be effective alone. In combination, however, they prevented nausea in humans even when gagging was induced by touching the throat with a tongue depressor. In other tests, irrigation of the ear canal with icy cold water for five minutes failed to induce nausea when these drugs had been given, though without the drugs, the human guinea pigs, one of whom was Captain Wolf himself, rapidly became nauseated by this ear irrigation. Rhythmic rotation of the head while the eyes fixed a spot on the ceiling also failed to induce nausea after the atropine-prostigmine combination, but did induce nausea without it.

The drugs prevent nausea, apparently, by blocking inhibition of stomach contractions. In the tests, Captain Wolf had found that the first effect on the body of nauseating stimuli was to stop the normal activity of the stomach. This inhibition of stomach activity occurred within one minute of application of the nauseating stimuli and considerably before the skin grew clammy, the eyes began to move rapidly and involuntarily and the person felt dizzy and nauseated.

It was to learn whether nausea would occur without the stopping of stomach activity that Captain Wolf tried the effects of atropine and prostigmine. The drugs did keep the stomach contracting at the normal rate and no nausea was felt, from which Captain Wolf concludes that the drugs might be used to prevent seasickness.

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ORDNANCE

Reducing Gun Recoil

Mounting of 75-mm cannon in airplanes may herald revolution in artillery, if same rebound-eliminating method can be used on other guns.

➤ A REVOLUTION may be impending in artillery, if the still-secret method of eliminating or greatly reducing recoil used in the new 75-millimeter airplane cannon is applicable to guns used on the ground or on shipboard. It may portend enormous increases in either caliber or power of naval guns. At the very least, it should mean the disappearance of the clumsy-looking, bulbous muzzle brakes that have appeared recently on high-velocity field and anti-tank guns, especially in the Russian and German services.

One of the most difficult problems with which artillerists have to deal is recoil. When a gun is fired it pushes itself backward as hard as it pushes the shell forward. The only reason why it does not go backward as far as the shell goes forward is that it is so much heavier. Before the invention of modern recoil-absorbing mechanisms about 50 years ago, guns used to jump backward several feet when they were fired. Of course that threw the sights off the target, and the gun crews would have to push them back into position and aim them all over again.

Even now, it is necessary for the trail of a field gun to be braced firmly into the earth by means of a broad spade at its end, and for naval and harbor-defense guns to be bolted securely to deck or concrete base. Firing a salvo directly abeam from a battleship's guns will cause the whole huge craft to heel over several degrees. If the new American heavy-caliber aircraft guns are mounted on a recoil mechanism transferable to these other classes of ordnance, it should be possible to achieve far greater accuracy of fire with present weapons, or to increase muzzle energies very greatly without sacrifice of present firing qualities.

During the first World War, an attempt was made to achieve a recoil-less gun by building a piece that "shot both ways." It had two barrels pointed in opposite directions. The breech mechanism was in the middle. The cartridge was double-ended; it had a shell in the "business" end, and to absorb the recoil it had an equal mass of fine lead shot in the other. The powder charge was sandwiched between. When fired, the shell went forward normally, and the shot was "kicked" out of the rear barrel.

This gun was tested on airplanes and light surface craft, and worked fairly successfully, at least in places where the magnified shotgun charge at the rear would fall harmlessly and not shoot up supporting troops or helpless populations in towns below. This gun has never been revived.

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***BANDBOX FOR PROPELLERS—** This transparent plastic shield protects the propeller blade from air drafts which make the delicate checking of the balance of the blade a time-consuming process. The shield is made of Lumarith produced by the Celanese Celluloid Corporation.*

ENGINEERING

Flying Glass Hazard

Dangerous shattering of windows by bomb explosions is possible even though the panes have been treated with anti-scattering materials.

➤ FLYING GLASS from windows blasted by bomb explosions is still a hazard even when the glass has been given an anti-scattering treatment, declared Frank W. Reinhart of the National Bureau of Standards, speaking at the meeting of the American Society of Mechanical Engineers in New York City.

In the Bureau of Standards investigation a vacuum-concussion chamber was used to test the various anti-scattering treatments. The glass specimen was clamped as a cover over a tank connected to a vacuum reservoir. The opening of a quick release valve reduced the pressure inside the tank suddenly, causing the breaking of the glass by the air pressure on the outside.

Lacquers, tapes and adhesive-fabric materials were used in the tests. They were subjected to accelerated aging to determine how well they retained their anti-scattering properties in service. All three materials were found to have some satisfactory breaking characteristics.

"An adequate film thickness, at least 0.02 inch, must be applied in the case of lacquer and the tape must completely cover the pane in overlapping strips," Mr. Reinhart said. "Individuals should take shelter away from glass-enclosed spaces even though the glass is covered with an anti-scattering material."

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Turbosupercharger

➤ "THE LAYMAN looks with amazement when he first sees the turbosupercharger with its turbine glowing brilliantly at 1,700 degrees Fahrenheit, while only inches away its compressor is inhaling the frigid, rarefied air of the substratosphere at 100 degrees below zero," E. E. Stoeckly of the General Electric Company, West Lynn, Mass., said.

These turbosuperchargers have put America's biggest bombers and deadliest fighters on top of the enemy.

"In the thin air at today's fighting altitudes of 25,000 to 35,000 feet, the unsupercharged aircraft engine, developing less than 25% of its sea-level power, is ineffective. This loss in power is restored by supercharging—forcing a normal weight flow of air into the engine," he explained. "Centrifugal-type air compressors are used to supercharge aircraft engines. When the power to drive the compressor is taken from the engine crank shaft, it is termed 'gear supercharging.' When the compressor is driven by an exhaust-gas turbine, it is called 'turbosupercharging.' In the high altitude bombers and top-flight fighters, the two are combined."

"These compactly built fire-eating turbosuperchargers multiply engine power several times at high altitudes. They operate at terrific speeds with all parts stressed to their ultimate limit. Thus, they must not only be carefully designed and built but must be tested with extreme care under all the conditions which are encountered in actual flight."

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Yankee Ingenuity Needed

➤ ENGINEERING schools should offer to selected students special opportunities to develop their Yankee ingenuity, Wilbur L. Merrill, director of the General Electric works laboratory, Schenectady, N. Y., told the American Society of Mechanical Engineers.

Y. I. is as important as I. Q. While technical colleges are providing excellent enginering training, they are developing ingenuity only subconsciously, Mr. Merrill said.

"Engineering development and design along established lines will yield a sound product," he said, "but for the new short cuts to save labor and material, for the new stunt which makes the product radically better, for the new scheme which makes possible the heretofore impossible, we must look to Yankee ingenuity."

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Human Relations Research

➤ THE STUDY of people by industrial production research departments is as essential as the study of equipment, processes, methods and materials.

This idea was advanced at the meeting by L. C. Morrow, editor of *Factory Management and Maintenance*, in a panel discussion.

"What makes people work well?" he asked. "Is it good health, food, nutrition, music, quiet, good industrial relations, education?"

Such studies of human relations in industry should be classified as production research Mr. Morrow believes.

"We should achieve as nearly as we can the lowest possible costs of production in order to allow sales prices low enough to bring about a distribution of industry's goods and services wider than we have ever experienced," Mr. Morrow said. "That is the only way we shall be able to achieve a high standard of living for everybody. It is the means by which our industries can be given a production demand that will mean a plentitude of jobs."

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MEDICINE

Navy Uses Movie Film To Detect TB in Recruits

➤ THE 35 MILLIMETER motion picture film, similar to that which brings you your favorite screen star, has become a major weapon in the U. S. Navy's continuing war against tuberculosis.

The film is part of the photofluorography system for taking X-ray pictures of the chests of all recruits, in order to detect and weed out those with tuberculosis. The films can be made at the average rate of 200 per hour, cost only one cent per person and doctors are able to review the negatives at the rate of 400 per hour. Saving in space of storage for the films is another advantage.

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VOLCANO OBSERVATORY — New hut used by Dr. Ordonez in observing Paricutin and Zapicho.

ZAPICHO—This baby companion to Paricutin, Mexican volcano, is throwing stones in the air. This photograph taken by Dr. Ordonez on Nov. 18 shows at the right the slope of the major cone of the big volcano. The cover photograph is a view from another angle.

GEOLOGY

Baby Volcano Crater

At the northwestern edge of Paricutin, Mexico's new volcano, is a crater 100 feet high that has produced lava outburst larger than nine previous flows.

See Front Cover

➤ A LITTLE volcano cone a hundred feet high is now erupting at the northwestern edge of the main cone of Paricutin, Mexico's active volcano. It is the only survivor of five lava blisters that rose in the Mexican volcano's basin on Oct. 16.

The new cone has been christened "Zapicho" by Dr. Ezequiel Ordonez, leading geological watcher of Paricutin, who recently revisited Paricutin before he left for a lecture trip to southwestern United States, as guest of the American Association of Petrolcum Geologists. Zapicho means "small" in Tarascan, the native Indian language spoken in Michoacan, the state in which the volcano is located, some 200 miles west of Mexico City.

Zapicho is behaving like a small-scale replica of Paricutin, throwing out liquid lava, vapors and stones. Located so close to the main crater, it is considered another vent from the same volcanic source, but it is nevertheless worthy of a name of its own.

Zapicho has produced an outpouring of lava larger than the nine previous liquid lava flows. It is a mass about a mile long and 1,200 feet wide.

The observatory used by Dr. Ordonez, in watching Paricutin frequently since its birth in February, was threatened by the moving lava and the light wooden hut had to be moved hurriedly to a safer spot. Near the earlier observatory hut there was a bomb-crater of ancient volcanic origin, and this hole, 100 feet deep and 600 feet in diameter, was completely filled with the flowing incandescent lava, which overflowed toward the observing post of Dr. Ordonez.

Blue vapors, yellowish gases, and liquid lava were being thrown 360 feet into the air. Frequently there were outbursts of ashes. The smell of sulfur was reported wide-spread.

Some lava emitted by the volcano is so light that it seems to be floating in the air and fragments are blown farther than 3,000 feet. Many of the pieces are fibrous and look like coarse blond hairs quite similar to Pele's hair of Hawaiian volcanic action.

Heavy ash is thrown out by the volcano and this has laid down a yellow mantle over the nearby countryside.

Dr. Ordonez found Paricutin more beautiful than ever, but the destructive effect of its sand and dust has increased as the months have passed. In the nearest city, Uruapan, 20 miles from the volcano, all vegetation is covered by a thick film of dust and orchards and gardens are producing practically no crops as a result.

The nearest sizable village to the volcano, San Juan Parangaricutiro, is practically ruined. The Tarascan Indian inhabitants are poverty-stricken, agricultural production has stopped, and soon the village will have to be abandoned.

Those who live near the volcano are now calling Paricutin "she" referring to "la volcana," although when the eruption first occurred, it was called as the dictionaries have it, "el volcan," which is masculine.

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INVENTION

New Whey-Drying Process Invented by Two Germans

➤ AN INVENTION of potential value to the milk-using industries is a more economical process for drying whey, the watery liquid left after milk solids have been converted into cheese or industrial casein.

Water in whey has long been one of the most troublesome of dairy-industrial problems. There are valuable sugars, acids and proteins in whey, but the cost of evaporating or otherwise getting rid of the water has made them prohibitively expensive.

In the present invention, on which patent No. 2,335,380 has been issued, the cost is reduced by whipping air through the whey in its last stage of processing, after it has already been thickened by evaporation in a more or less conventional vaporizer. Forcing the air into the thickened whey also cools it off, and leaves an end-product that is porous but not frothy, easily handled and with good keeping qualities.

Any American dairyman or industrialist can have the use of this patent practically without cost to himself, for the inventors are subjects of an enemy alien power, and their patent has accordingly been vested in the Alien Property Custodian, to whom inquiries about its use should be directed. The inventors are Kurt Bertram of Berlin and Erich Lemmerich of Mulheim-Ruhr—or perhaps one should say nowadays, formerly of these cities.

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MEDICINE

Christmas Tree May Cause Holiday Asthma Attacks

➤ CHRISTMAS TREE allergy may be the explanation for post-holiday asthma attacks in children who have never previously had asthma, in the opinion of Dr. Charles C. Coghlan, of Los Angeles.

He describes this apparent newcomer to the growing list of allergies in a newly published book *Are You Allergic?* (Barrows), of which he is co-author with Jessamine Hilliard.

To a child with an allergic predisposition, he explains, inhaling with every breath the fine dust shed by the Christmas tree for the week or more it is in the home may be the extra straw which breaks the camel's back and brings on severe allergic symptoms for the first time.

Added excitement and overeating of rich foods may play a part in bringing on a first attack of asthma right after Christmas, but, says Dr. Coghlan, allergists believe the Christmas tree of equal or greater importance.

For prevention, without depriving the allergic child of his Christmas tree, artificial trees or those sprayed for just this purpose are suggested. As an alternate, the Christmas tree may appear on Christmas day only, being promptly removed the following day.

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CHEMISTRY

New Process Makes Dried Milk Keep Longer

➤ POSSIBILITIES of producing whole milk powder with excellent keeping qualities appear bright as a result of recent discoveries by Prof. C. D. Dahle and D. V. Josephson of the Pennsylvania State College.

In preliminary trials, these dairy research workers have indicated that the oxidation of lecithin, a constituent of the membrane surrounding the fat globules of milk, is the main reason why dried whole milk becomes stale so rapidly in storage. Huge amounts of dried whole milk are being purchased by Lend-Lease and military authorities but it has to be used rather quickly, since it develops off flavors and odors after it has been in storage a few months.

Removal of about half of the lecithin during the process of dried milk manufacture improved its keeping qualities considerably, Professor Dahle and Mr. Josephson found. Laboratory samples of ordinary dried whole milk stored in airtight containers became stale in a month at 85 degrees Fahrenheit. Others sealed in nitrogen developed a slight off-flavor in two months. Samples which had been especially processed to remove as much of the lecithin as was readily possible and which were sealed in air were only very slightly stale at the end of two months. Samples of this product sealed in nitrogen did not even become slightly stale until the end of three months and were in no worse condition at the end of five months.

The lecithin was removed by first separating the cream from the milk, cooling and churning the cream into butter, and then melting the butter. The curd containing most of the lecithin in the butter was removed by washing and filtering. Part of the lecithin remaining in the skim milk was removed by centrifuging at 25,000 r.p.m. The butter oil and supercentrifuged skim milk were again combined and the resulting product was homogenized and dried in accordance with regular plant practice.

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PHOTOGRAPHY

Sound Film Projectors To Be Standardized

➤ SIXTEEN-MILLIMETER sound projectors used by troops for training purposes and for entertainment are to be standardized.

Thousands of feet of film are being used in the United States and abroad by the armed forces to teach and to amuse soldiers. These films are now projected by equipment made by many concerns, each with non-interchangeable parts. Large stocks of repair parts must be maintained for each make of machine. A standard machine would eliminate waste of large stock piles and make maintenance easier. The quality of equipment could be determined and maintained and longer production runs could be made.

Lenses which should readily fit into standard mounts on cameras often require special machining before they can be used.

For these reasons the armed forces and industry have asked the American Standards Association, through the War Production Board, to form a War Standards Committee for standardization of photographic and cinematographic equipment. The Association is now at work on the needed specifications.

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IN SCIENCE

PHYSICS

Improved Thermometer Measures Gas Temperature

➤ AN IMPROVED thermometer for measuring the temperature of exploding or burning gases, as for instance in a gasoline engine, was described by W. T. David of the Engineering Department of the University of Leeds in the British journal, *Nature*. (Sept. 4)

The thermometer generally used for this purpose makes use of five platinum-rhodium wires, the electrical resistance of which increases as the temperature rises. The resistance is measured by an electrical instrument and translated into degrees of temperature.

Mr. David found that some of the gases not yet completely burned settled on the wires—platinum in fact promotes combustion—and there completed combustion, giving the thermometer an extra rise in temperature.

By coating the wires with quartz, he found that this trouble was avoided, and more reliable temperatures were given.

Using two similar thermometers, one with bare wire, the other with quartz-covered wire of the same over-all size, he found that the bare-wire thermometer gave temperatures from 400 to 700 degrees Fahrenheit higher than the thermometer with the quartz-covered wires, the amount of the excess depending on the composition of the burning gases.

In gases that were merely hot, not burning, the two thermometers gave the same temperature.

Science News Letter, December 11, 1943

GENERAL SCIENCE

Sigma Xi Authorizes Five More Chapters

➤ FIVE MORE colleges are to have chapters of the Society of Sigma Xi, the national honorary fraternity for the promotion of scientific research, as the result of action taken at the Sigma Xi annual convention in Chicago.

The new chapters will be located at Emory University, Atlanta, Ga.; North Carolina State College, Raleigh, N. C.; St. Louis University, St. Louis, Mo.; Vanderbilt University, Nashville, Tenn.; and Wayne University, Detroit, Mich.

Science News Letter, December 11, 1943

NCE FIELDS

PLANT PATHOLOGY

Microscopic Parasite Carries Walnut Disease

➤ ANOTHER disease, this time of a plant, has been caught hitch-hiking on a many-legged carrier as malaria is borne by mosquitos and Texas fever by ticks. The disease is walnut blight, which destroys great quantities of English walnuts every season. The creature that carries it is known as the erinose walnut mite, a microscopic parasite that feeds only on walnut trees and is practically universal in distribution. Hitherto it has not been considered as of any particular importance.

Dr. B. A. Rudolph of the University of California's deciduous fruit station, reports his discovery of the mite's pestiferous activities in *Science*. (Nov. 12) He proved his case against the minute trouble-maker by isolating from its body the bacteria that cause the disease, culturing them artificially, and reproducing the disease in previously healthy walnut shoots.

Science News Letter, December 11, 1943

PUBLIC HEALTH

You Can Help Meet The Physician Shortage

➤ RIGHT NOW, in the winter season of increased cases of colds, pneumonia, influenza and other illness, is the time for each of us to plan what to do in case we or our families get sick. Since so many doctors are now in the armed services, it will no longer be possible, when illness comes, to pick up the telephone and have a doctor at your home within 15 minutes or half an hour.

The first thing to do is to select a doctor to call in case of sickness. If your doctor has gone into the Army, his office may be able to tell you who is taking care of his patients. If you have moved into a new community, it would be a good idea, unless your home town physician gave you the name of a doctor in the new town, to call the local medical society for the name of the doctor nearest your home.

Next, be sure to telephone the doctor at once when there is illness. This is always wise, but is especially important now when all doctors are so very busy. If you telephone the doctor promptly, he can arrange his time to see you more promptly, and he can tell you what to do until he does see you.

If an emergency arises before you have selected a doctor, call the nearest hospital for the name and address of a doctor near you. In some communities the police department and the supervisor of the local telephone company can help you locate a doctor in an emergency, the Illinois State Medical Society points out.

You can help meet the doctor shortage, if one exists in your community, in still another way. That is by taking courses in both first aid and home nursing at your local Red Cross chapter. This will teach you how to keep the patient safe and comfortable until the doctor arrives and you will know better what to tell the doctor over the telephone and how to follow the directions he gives.

Science News Letter, December 11, 1943

ANIMAL HUSBANDRY

Substitute for Liver In Minks' Diet Suggested

➤ THE TRADITIONAL "apple a day" in the diet of the mink is liver—but what with meat shortages, mink raisers are having trouble keeping the luxury animal supplied with its daily quota.

Feeding the minks "telang" livers is recommended by A. I. Coombes and E. B. Hart, University of Wisconsin research workers. These are livers which have been condemned for human consumption because they contain an excess number of blood vessels, which results in an abnormal appearance. However, despite appearances, they are satisfactory for animal consumption.

Commercial liver by-products were tested by the Wisconsin zoologists and found to be adequate fresh liver substitutes.

Horse liver and liver meal are suggested as wartime diet replacements by the U. S. Fish and Wildlife Service. Liver meal comes from beef animals such as milk cows that are too thin or old when slaughtered to be used for choice cuts.

Although the cause for some internal disorders common among minks has not as yet been determined, the Wisconsin zoologists report that these disturbances may be remedied or prevented by well-balanced diets including the proper proportions of liver or liver substitutes, fresh vegetables and calcium.

Science News Letter, December 11, 1943

ASTRONOMY

Ninth Magnitude Comet Found by Dutch Astronomer

➤ A NINTH magnitude comet has been discovered by the Dutch astronomer, Dr. H. van Gents, at present on the staff of the Union Observatory at Johannesburg, South Africa. Moving rapidly, it was diffuse in appearance.

The comet was found very close to Nova Puppis, the new star which blazed out so brilliantly in November a year ago. This is purely a coincidence, however, there being no physical significance in this fact.

Observers in the United States will have difficulty in studying the comet, which is moving rapidly to the southwest. Its path may carry it so far south as to bring it completely below our southern horizon so that professionals and amateurs in Mexico, South America, South Africa and Australia will have to carry on the study.

At the time of its discovery on Nov. 27 at 5:15 p.m., EWT, the new comet had a right ascension of eight hours, seven minutes and a declination of minus 34 degrees, 14 minutes. Its daily motion, as reported to Harvard Observatory, clearing house in the United States for such information, was eight minutes, six seconds to the west and one degree, 30 minutes to the south.

Science News Letter, December 11, 1943

METALLURGY

Stainless Steel Will Be Shinier But Cheaper

➤ SHINING stainless steel of the postwar era can be expected to be more highly polished than ever, yet cheaper, because of a new electrolytic method invented by Dr. Charles L. Faust, young chemist at the Battelle Memorial Institute in Columbus, Ohio, on which U. S. patents Nos. 2,334,698 and 2,334,699 have just been granted.

Heavy factor in the present high cost of polished stainless steel is the tedious job of mechanical polishing. Dr. Faust obviates this by suspending the article to be polished in a strong acid solution, making it the anode of an electrolytic circuit. The electric current causes all roughness, surface stains and other defects left by the manufacturing process to flow away from the metal, leaving a bright, mirror-like surface.

Rights in the patent are assigned to the Battelle Memorial Institute.

Science News Letter, December 11, 1943

CHEMISTRY

Tomorrow's Gasoline

Petroleum chemists say triptane, a fuel which is not gasoline but another hydrocarbon, may give Allied planes great superiority over the Axis.

By JOHN A. MIRT

➤ A FEW YEARS ago, triptane, the world's most powerful "gasoline," was a laboratory curiosity. It was considered a fuel of great potentialities. But it cost $3,600 a gallon to produce.

The coming of war spurred research and much was accomplished. The price was hammered down to $40 per gallon, which was low relatively but not nearly low enough, even for our well-heeled army. And there the matter rested until an old man in a Chicago laboratory began testing and worrying and pacing the floor and staying awake nights. Toward dawn one day he got hold of a thread and the whole thing unraveled. The cost of making triptane came down to less than $1 a gallon. Under mass-production methods, the cost will be less.

The discoverer was six-foot Prof. Vladimir N. Ipatieff, a man of 76 years, who knows as much about gasoline and oil chemistry as any man living. He was assisted by 28-year-old Dr. Vladimir Haensel. In addition to developing triptane, Professor Ipatieff was largely responsible for 100-octane gas, without which our war planes could not fight effectively. He did the major research in butadiene, basic ingredient of most synthetic rubber production. He has also taken oil field gases which once floated off as waste and compressed them into gasoline—thus helping immensely to conserve our petroleum resources.

Triptane is his greatest achievement. Fill the gas tank of an airplane with triptane and it could get up in the air from a much shorter runway. And once off the ground, it would go faster, climb higher, maneuver more easily and go farther than with any other fuel yet developed. Technically, triptane is not "a gasoline" but another hydrocarbon. Petroleum chemists say it will give our planes a 40 to 50 octane superiority over those of the enemy and Dr. Gustav Egloff, former president of the American Institute of Chemists, has said that with triptane in our tanks we would be able to shoot down German and Jap fliers "as if they were roosting pigeons."

When the war ends, these virtues of more miles to the gallon, from a smaller and more potent engine, will be handed along to the car owner, to make driving more pleasant and more economical.

Despite this and other achievements, triptane's genius, Professor Ipatieff, is virtually unknown to the people of this, his adopted country. Yet his story is written in the records of the great scientific institutions of the world, in the fields of both practical and abstract research. Robust as Professor Ipatieff is, his broad chest is scarcely wide enough to make room for all the decorations which have been awarded to him.

Vladimir Nikolaevich Ipatieff was born in Moscow 76 years ago, the son of an architect, descendant of a famous Russian family. It was on the Ipatieff estate that the first Romanoff, Michael, assumed the crown of Russia. And it was from the home of Professor Ipatieff's brother that the last of the Romanoffs were kidnaped and sent to their death.

The young Vladimir, destined for a military career, went to Russia's West Point, was graduated a captain, but instead of going into the service remained to teach chemistry to the young cadets. Fortunately the job left him plenty of time for research.

His career began with a failure. He was trying to make butadiene but he got something else, an aldehyde (which is intermediary between an acid and an alcohol). He couldn't understand it and was so concerned that he went back over the experiment until he had traced the outcome to the fact that he had used an iron tube instead of one of glass. The iron had acted as a catalytic agent, that is, it had influenced the result without being affected itself. Now catalysis was not new; for more than a hundred years, chemists had known about it. But Ipatieff put it to work and, following his example, so have thousands of other scientists with far-reaching results in our everyday life. It is today one of the most important tools at the command of modern chemistry.

This achievement won him wide recognition and honors which for any ordinary man would have been enough. But Ipatieff, having discovered the magic wrought by catalysis, wanted to find out more about it. He wanted, for example, to discover how catalysis functioned under pressure.

The only pressure tank available to the chemist in that year—1903—was one which had been invented in 1690. It pro-

MERITORIOUS SERVICE—James L. Buckmaster, a photogrammetric engineer of the Geological Survey, U. S. Department of the Interior, was awarded a salary promotion for the invention of this "sketchmaster."

vided a pressure of 50 atmospheres, and was considered a very dangerous instrument.

Ipatieff, undaunted, built a tank with a pressure of 500 atmospheres and then used it to develop a revolutionary industrial process for hydrogenation. This is the method by which organic substances are changed by the injection of hydrogen.

One of his major discoveries—one vital to our war effort and tied in with the development of triptane—occurred when he took paraffins which had been regarded as "dead" or inert to chemical reaction and made them go to work. The product of this job was, in time, high-octane gas.

At a testimonial dinner to Professor Ipatieff on his 75th birthday, tendered by the American Institute of Chemists, Dr. Frank C. Whitmore, dean of Penn State's School of Chemistry, said: "The great triumph of modern internal combustion engines has been the work of thousands of different scientists and engineers. However, if one had to pick out one lone man who was more responsible than any other for our high-octane gasoline, one of our most important weapons in defense and offense, that one man is Ipatieff."

Earlier in his career Professor Ipatieff had published a paper in which he established the constitution of isoprene, the so-called mother hydrocarbon of natural rubber. In 1928, as consultant for the Bavarian Nitrogen Works, he developed a process for turning phosphorus into phosphoric acid—an achievement of incalculable value to farmers using artificial fertilizer.

When the first World War broke out he was raised to the rank of a general and named director of Russia's chemical industries. He continued in the post after the revolution, building from scratch. Lenin and Trotsky often consulted with this man who had been a frequent guest at the palace of the Czar Nicholas. He was impelled to go on by love for his work and gratitude for the appreciation shown him by the Soviet authorities.

In 1930, Dr. Egloff, then director of research for Universal Oil Products Company, invited the eminent Russian to come to Chicago to organize a laboratory for the study of catalytic problems in the petroleum industry. A passport and a first-class passage were placed in Professor Ipatieff's hands before he had definitely made up his mind, and in 1930 he and his wife set out for the U. S.

Professor Ipatieff liked the United States. When Joseph Stalin asked him to return to Russia, in the belief that the chemist had developed new formulas for explosives and poison gas, Ipatieff refused. Stalin insisted, once sending Alexander Troyanovsky, Russian Ambassador to the United States and a former pupil of Ipatieff's, to Chicago to persuade him to return.

ITALIAN MIDGET—One of the tiny submarines of Italy's fleet is shown in this official U. S. Navy Photograph. Below the torpedo tubes fixed to the sides, the hull bulges out, making it look like a turnip from a bow-on view.

At that time Ipatieff said: "I am not going back because I prefer American working conditions. I am getting on in years and when the weather is bad and I am feeling ill, I appreciate the privilege of staying away from my laboratory without resorting to a lot of unpleasant red tape to get official permission."

Stalin's displeasure was definitely revealed in 1937 when at a dinner honoring Ipatieff's 70th birthday, given by the American Chemical Society and attended by scientific notables from every country in the world—one nation was not represented, Soviet Russia. A month later word came that he had been expelled from the Russian Academy of Sciences, that his citizenship had been taken away and his honors revoked.

Shortly afterward, his son and namesake, a professor of chemistry in Leningrad, publicly denounced his father for his refusal to come back to Russia, calling him "an enemy of the proletariat."

Professor Ipatieff, not without a certain regret, became a citizen of the United States. He had wanted to revisit Russia, to see his children again. But he was adamant in his love for freedom. When he took his examination for citizenship he was asked if he attended church. "Certainly," he replied. "What church?" continued the judge. "Any church—this is a free country." The examination came to an end right there.

Every country in the world has honored him. France gave him the Lavoisier medal for his work on high pressure. The University of Munich gave him an honorary doctorate, Russia the Lenin prize. In 1939 he was elected to the National Academy of Sciences in this country and a year later was named "Modern Pioneer" by the National Association of Manufacturers. That same year, the Willard Gibbs medal, most coveted of American prizes, was bestowed upon him by a committee of scientists.

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For his adopted country he has performed many acts of generosity. A teacher at Northwestern, he gave the university $26,000 for a high-pressure research laboratory. Besides many individual gifts to talented young chemists, he established a $35,000 trust fund, the interest of which is being used for prizes to be awarded by the American Chemical Society. In explanation of these gifts, he said, "I should like to feel that I had a part in developing young American chemists."

At the university he is extremely popular as the prof who exults in the triumph of his students, who is perhaps more forlorn than they are when they fail, and who when excited becomes incomprehensible because he forgets his English and talks only Russian.

Each day this erect gray-haired man sets out for a one-hour walk, no more, no less. He is a gentleman of the old school, clicking his heels, and bowing at the waist. His voice is soft and it is rarely raised. To a gathering of eminent scientists honoring him on his 75th birthday, which was also his golden wedding anniversary and the 50th anniversary of the presentation of his first scientific paper, he said simply: "I have lived through several wars and revolutions and I am happy that I have been able to keep my love for my chosen science and that I still retain my physical strength."

Professor Ipatieff's wife is quite as spry as her husband. The old man refers to her as his personal catalytic agent—by that, he explains, he means his inspiration. He added: "On a wife's love and tact depend not only that well-being of her children but the well-being and peace of mind of her husband, without which he cannot work or create. These are the highest aims of a wife and these my wife has fulfilled."

This simplicity is typical of the man who has worked out processes which may well add up to the greatest individual contribution to an Allied victory.

Science News Letter, December 11, 1943

PHOTOGRAPHY

Rating Film Speeds

Sensitivity characteristics of camera film will be classified by a single system by an American Standards Association book, eliminating present confusion.

➤ CONFUSION created by numerous methods of rating the speed of photographic film will be eliminated when manufacturers publish the American Standards Association speeds for films.

In the past each manufacturer of films and exposure meters rated the many kinds of films now used by photographers with a system of his own. These many different ratings often left the user of film in doubt about the exposure needed for the film he wished to use; or the rating given him would not be the one best suited for the use of his light meter.

The single well-defined system of expressing the sensitivity characteristics of film now adopted will remove this confusion, and manufacturers need publish only one set of ratings.

All standard films will be rated by two methods. One method, called the ASA speed, gives an absolute value, indicating the minimum camera exposure which the film must receive in order to produce a negative from which an excellent print may be made. The other, called American standard speed number, is the number giving recommended exposures for normal photographic practice to yield the highest number of excellent pictures.

The American standard speed number falls approximately halfway between the Weston and General Electric numbers. This makes possible its use with existing photoelectric exposure meters with no change in the dials. The latitude of most film will take care of the difference in the ratings.

Branches of the armed forces are now having meters made with the new numbers on the calculators. After the war probably all meters will use the new numbers.

Film furnished the armed forces has been rated by the new method for some time, but the number is called exposure index and is designed to be used with the *American Emergency Standard Photographic Exposure Computer,* a small book which allows computation of exposure by observation.

The American Standards Association has the cooperation of all leading film and equipment manufacturers, who will publish the film speed numbers.

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Do You Know?

Gasoline consumption in Denmark is only 1% of the pre-war rate.

Cigarette paper that sheds water, now reported available, will permit soldiers and others to smoke in the rain.

Approximately one-fourth the *copper* mined and smelted in the world in 1938 was produced in the United States.

Common *paperboard* is being made in Palestine from banana and orange peel pulp, cotton waste and banana leaves.

As late as 900 A.D. the Dalmatians and Dacians along the Danube used poisoned *arrows* for hunting and fighting.

New *oil wells* are now in production near Ft. Norman in northwest Canada, only about 100 miles from the Arctic Circle.

An *oyster* pumps through its gills every day about 40 gallons of water, straining out micro-organisms for food and absorbing lime for its shell.

Britain's *"sticky bomb"* is a glass flask filled with a high explosive and covered with a sticky fabric; hurled against the side of a tank, it sticks, then explodes.

The science of electric *arc welding* of metals was known during World War I but relatively little used; now it is used in practically all types of metal construction.

The Federal Bureau of Reclamation has 52 *operating projects* that are providing irrigation, power, or municipal water to western areas with a population of nearly 5,000,000 people.

The 1942 average yield of *potatoes* in the United States was 136 bushels an acre, a 10% increase over the 1930-39 ten-year average, due largely to new varieties which resist disease and give greater yields.

Riveters and rivet-buckers at an aircraft plant use throat microphones to talk with each other; although only a foot or so apart they are separated by a wall of metal through which they can communicate only by telephone.

PSYCHOLOGY

Race Riot Prescription

Detroit scientists prescribe for the prevention and cure of Negro-white disorders, basing their advice on the experience of their city.

➤ YOUR CITY may be spared the horrors of a repetition of Detroit's "Bloody Monday" race riots, if the simple, practical prescriptions for riot prevention formulated by Dr. Alfred McClung Lee and Dr. Norman D. Humphrey, of Wayne University, prove effective.

Like an epidemic disease, a race riot is preceded by certain symptoms that can be recognized. It is possible to prepare a "fever chart" of heightened racial tension, and act at once on this warning to prevent bloodshed and violent destruction. Information in confidential files of the Federal Office of Facts and Figures 15 months before the Detroit riots indicated that those riots were inevitable.

What to do immediately, "before the doctor comes," in case a riot should break out in your city is prescribed by these Wayne University scientists in a new book, *Race Riot* (*Dryden Press*). The medicine is based on experience in the Detroit riots, as they analyzed it:

1. Demand state militia or the U. S. Army; do not count on local police to quell the riots.

2. Quarantine the race riot district. New recruits and supplies for rioters must be kept from reaching them. But innocent people in the quarantined district should have necessary food and medical care.

3. Keep the children in school, overtime if necessary, especially the high school students. Children are unlikely to create any disorder in school, but may join the rioters when let out.

4. See that accurate reports of what is going on and constructive official statements reach the public.

5. Do not experiment with half-way measures. A race riot is dynamite!

The scientists cite 13 symptoms that should serve as flaming danger signals to any community that race riots are brewing and approaching the boiling over point:

1. A shift in public opinion permitting sadistic and aggressive sentiments to find open expression.

2. Increase in race-rumor circulation and in the purposiveness and the sensational character of the rumors. On the eve of race riots race rumors bear the earmarks of artificial creation and abnormally rapid dissemination. They may be the work of subversive groups deliberately attempting to precipitate the acts of violence.

3. Intensification in the frequency, boldness and violence of racial frictions.

4. More open action of anti-Negro and anti-white organizations in propagandizing against each other, and the assumption on their part that such action will be more acceptable to the public than previously.

5. Spectacular rises in juvenile delinquency.

6. An increasing distrustfulness of police by Negroes. The Negro press can be watched for evidence of this.

7. Evidences of a common front or pro-white or anti-Negro camaraderie between the police and hoodlum elements.

8. Increasingly prominent accounts of third-degree and other police violence and of disciplinary actions by police officials.

9. An accumulation of pressures for living space within a hemmed-in Negro district.

10. Sharp defensive movements on the part of landlords and real estate people to keep the Negro community from expanding in directions where they believe Negro occupancy would lower property values.

11. White envy of "big money" earned by formerly impoverished Negroes who do not know how to handle it and who naturally spend it rather openly.

12. Factors that clog or seriously impair the normal and accepted channels of collective bargaining so that industrial unrest has no adequate means of expression and outlet and thus may be diverted into anti-Negro excesses.

13. Increases in Negro and white employment contact where there has not been adequate preparation for sensible and democratic association.

If an alarming number of these symptoms should break out in your community, Drs. Lee and Humphrey offer this prescription:

1. Feel the pulse of the public. Scientists have developed expert methods of sampling public opinion and public sentiment as for pre-election polls. This will give an unbiased assay of the temper of the people.

2. It is not enough to gather facts. It is easy for people to feel that fact-finding in itself is an accomplishment. The reports and surveys are then allowed to gather dust in some file. Don't let this happen. Translate the information immediately into action that will solve local problems of immigration, housing, employment, recreation and the like.

Don't rely on an easy solution such as segregation to prevent race riots, these scientists warn. In Detroit, it was found that neighbors, black and white, living together in the same community do not riot against one another. Students at Wayne University, black and white, went to school together even on Bloody Monday and there was no disorder, no trouble. Workers in war plants where Negroes and whites were employed together had no rioting. The rioting occurred in segregated neighborhoods.

And don't expect experimental legislation to solve your problems. The laws on race and civil disorders in most of our states are fairly satisfactory, these scientists believe. What is needed is adequate and humane law enforcement.

And don't ignore the stupid and depraved elements in your city in taking action to prevent race riots. What they think and how they feel about the other race is extremely important. These are the people who may terrify you in the next race riot.

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MEDICINE

Dental Drill Peels Skin For Making Allergy Tests

➤ A DENTAL DRILL, symbol of pain to most persons, is being used at Rawson Hospital in Buenos Aires, Argentina, for allergy testing and is said to make these tests less painful than when performed by other methods.

The drill, mounted on a portable motor and similar to that used by engravers, peels the top layer of the skin by friction. A drop of extract of each substance suspected of causing allergy is placed on the rubbed area. After 20 minutes the reaction is read as usual.

False positive reactions due to contamination of the test substances with each other is avoided by this method, which is said to be not only less painful but more convenient and economical than skin testing for allergy by scarification or hypodermic injections.

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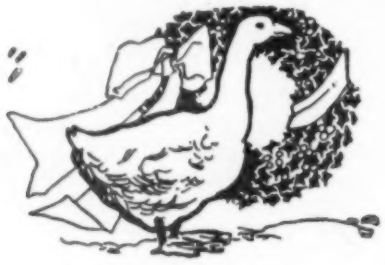
POULTRY HUSBANDRY

NATURE RAMBLINGS by Frank Thone



Christmas Goose

➤ CHRISTMAS GOOSE is staging somewhat of a comeback since the need for supplying a turkey feast to our men on the fighting fronts has caused a sharp shortage of turkeys in the home market. Many a platter that has never borne any other holiday bird than a proud gobbler will this year offer up a gander. Middle-aged Dads will have to modify their carving technique to the flatter, broader anserine bosom that has replaced the high keel of the more familiar bird.

Having a goose for Christmas dinner may be a novelty to many American families, but it is certainly nothing new. Indeed, the goose was the original ruler of the feast; the turkey, if anything, is the newcomer, the usurper.

Before the fifteenth-century discovery of America there were, of course, no turkeys anywhere in Christendom. In proud baronial halls, peacocks were sometimes sumptuously served, but in the less pretentious homes of ordinary burghers and prosperous peasants Yuletide brought a good roast goose.

If we can reconcile ourselves to the lack of white meat, much can be claimed in favor of the goose. The meat, though all dark, is jucier and richer than that of the turkey. If it has a fault, it is that it is too rich with fat: the problem is not to keep the bird properly basted but to remove the excess fat that oozes out during the roasting.

That excess fat, in these days of high ration-point value on all edible fats, is something to be prized. It is just about the finest and most wholesome of animal cooking fats, as many an American with post-Mayflower ancestors can still tell you. In rural areas, too, it is still esteemed as an ingredient of folk medicine —goose-grease and turpentine rubbed on the chest is a sovereign means for exorcising a bad, deep cough.

In Europe, where geese are kept in much larger numbers than they ever have been in this country, the goose is almost a two-legged sheep. For it supplies not only meat and cooking fat, but before it is killed it yields two or three crops of feathers which are plucked from the living birds (near spring moulting-time, when it won't hurt them) and made into the voluminous, smothering feather-beds that are the pride of every farm wife's heart, all the way from France to Russia.

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PUBLIC HEALTH

Interstate Quarantine

More rigid quarantine to prevent spread of diseases from overseas is foreseen. Tropical disease experts are studying the problem.

➤ MORE VIGOROUS interstate quarantine activities to prevent the spread of disease are in the offing, it appears from the report of Dr. Thomas Parran, surgeon general of the U. S. Public Health Service, to the American Public Health Association meeting in New York.

"Circumstances of war may necessitate strengthening the Federal interstate quarantine function," he declared.

The purpose would be to prevent the spread of diseases which might be introduced into this country from abroad and which "are not and should not be subject to national quarantine regulations."

In other words, a person who had malaria abroad would not be kept from entering the country, but because he might be carrying malaria parasites he should not be free to travel into regions where the malaria mosquitos are prevalent.

The Army and Navy can be counted on, Dr. Parran said, not to release infected personnel until they have had the maximum benefit of treatment for malaria or other infectious diseases. Some tropical diseases, however, are not amenable to perfect medical control. Unpredicted relapses will occur. To prevent epidemics starting from such patients who might have relapses, stricter quarantine control between states might be necessary.

Army, Navy and Public Health Service experts on tropical diseases, who are members of a newly created interdepartmental committee, are now "riding the airlines east and west" around the world, studying methods of preventing introduction of mosquitos or other insect carriers of disease.

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MEDICINE

Study Plastic Surgery

Nose, throat and ear specialists organize to improve themselves and fellow surgeons to give greater aid to the war wounded with disfiguring injuries.

➤ WITH THE AVOWED intention of improving themselves and fellow surgeons in the art of plastic surgery so as to give greater aid to the war wounded, a group of nose, throat and ear specialists gathered in New York City for the first annual meeting of their newly organized American Otorhinologic Society for the Advancement of Plastic and Reconstructive Surgery.

"Many of our boys will be coming back with disfiguring and mutilating deformities about the head and neck, and it is our sacred duty to be prepared and to stimulate other qualified otolaryngologists throughout the country to become trained in this field so that we will all be ready to give these boys a new lease on life and a better outlook on society," Dr. Romeo A. Luongo, of Philadelphia, president of the society, declared.

Ear, nose and throat specialists, professionally known as otolaryngologists, have until recently paid little attention to the reconstructive or cosmetic aspects of surgery, Dr. Samuel Fomon, of New York City, pointed out.

The discovery of the sulfa drugs and the resulting reduction in need for mastoid and similar operations has given the otolaryngologist time to "take stock. A critical evaluation of his inventory," Dr. Fomon continued, "disclosed that important parts of his domain, such as deep head and neck, neoplastic (tumor) and reconstructive surgery had been usurped by other specialties.

"In an effort to reclaim the lost territory, he found all facilities for gaining proficiency in the technic available except those pertaining to plastic and reconstructive procedures. Here all doors were shut, fundamental principles kept secret, and details of technic zealously guarded by the few who practiced the art. Some of the more adventurous attempted to develop a technic by the trial and error method, but soon found it too damaging to their practice and gave up the struggle."

Patients as well as otolaryngologists will benefit, he continued, when the surgeon who operates on the nose to improve the patient's breathing, for example, can at the same time produce a satisfactory cosmetic result, instead of having to refer the patient to another surgeon for another operation to complete the cosmetic part of the nasal reconstruction.

Science News Letter, December 11, 1943

• Books Off the Press •

AMPHIBIANS AND REPTILES FROM THE SUDAN—Karl P. Schmidt—*Field Museum*, 8 p., 10c., paper.

ASSIGNMENT: U. S. A.—Selden Menefee—*Reynal & Hitchcock*, 301 p., $3. The report of a 15,000 mile pilgrimage through America by an investigator of the Princeton Office of Public Opinion. One conclusion is that the people are not behind the government, they are ahead of it.

THE COMPLETE GUIDE TO NORTH AMERICAN TREES—Carlton C. Curtis and S. C. Bausor—*New Home Library*, 337 p., illus., 69c.

FLORA OF PERU—J. Francis MacBride—*Field Museum*, 507 p., $3.50, Vol. XIII, Part III, Number 1, paper.

GARDEN FLOWERS IN COLOR—Daniel J. Foley—*Macmillan*, 319 p., illus., $1.98.

GENERAL CHEMISTRY: A FIRST COURSE—L. E. Young and C. W. Porter—*Prentice-Hall*, 527 p., illus., $3.75, rev. ed.

HERE IS YOUR WAR—Ernie Pyle—*Holt*, 304 p., illus., $3. One of America's favorite correspondents tells the story of our soldiers' first big campaign.

HITLER'S SECOND ARMY—Alfred Vagts—*Infantry Journal*, 245 p., illus., 25c., paper. A description of Germany's military and semi-military organizations, besides the regular Army, that can be expected to fight bitterly as Allied forces penetrate deeper and deeper into Hitler's "Fortress Europa."

MAN'S FOOD, IT'S RHYME OR REASON—Mark Graubard—*Macmillan*, 213 p., $2.50.

METEOROLOGY WORKBOOK WITH PROBLEMS—Peter E. Kraght—*Cornell Maritime*, 148 p., illus., $2.25.

NETHERLANDS AMERICA: The Dutch Territories in the West—Philip Hanson Hiss—*Duell, Sloan & Pearce*, 225 p., illus., $3.50. Of scientific and technological interest are the sections on oil refineries of Curacao and Aruba, and the bauxite and agriculture of Surinam.

PERUVIAN SNAKES FROM THE UNIVERSITY OF AREQUIPA—Karl P. Schmidt and Warren Walker—*Field Museum*, 18 p., 15 c., paper.

OUTLINE HISTORY OF LATIN AMERICA—A. Curtis Wilgus and Raul d'Eca—*Barnes and Noble*, 420 p., illus., $1.25, rev. third ed., paper.

POWER UNLEASHED; The Story of Electricity and Power—M. M. Samuels—*Dorset House*, 300 p., $3.50.

THE RACES OF MANKIND—Ruth Benedict and Gene Weltfish—*Public Affairs Committee*, 32 p., illus., 10 c., paper. Pamphlet No. 85.

RECONVERSION OF INDUSTRY TO PEACE—Report by Officers of the Agriculture, Business and Labor Committees on National Policy of the National Planning Association—*National Planning Ass'n*, 24 p., 25c., paper. Planning Pamphlet No. 24.

ROAD TO ALASKA: The Story of the Alaska Military Highway—Douglas Coe—*Messner*, 175 p., illus., $2.50. Told for youthful reading. This is how engineers built one of the great life lines of our continent.

SNAKES OF THE PERUVIAN COASTAL REGION—Karl P. Schmidt and Warren F. Walker—*Field Museum*, 28 p., 20 c., paper.

TEACHER'S MANUAL: For Military, Marine, Vocational, and Industrial Training—Nicholas Moseley—*Cornell Maritime*, 208 p., illus., $2.

THREE NEW SNAKES FROM THE PERUVIAN ANDES—Karl P. Schmidt and Warren F. Walker—*Field Museum*, 6 p., 10c.. paper,

WARTIME SOCIAL STUDIES IN THE ELEMENTARY SCHOOL—W. Linwood Chase—*Nat'l Council for Social Studies*, 51 p., $1., paper.

WHERE'S THE MONEY COMING FROM?: Problems of Postwar Finance—Stuart Chase—*Twentieth Century*, 179 p., illus., $1. Hopeful, solid and important reading. Says Mr. Chase: "Where does the money come from? It comes from the work of the people and the work of their machines. The war is forcing this lesson upon us. We may have learned it by Demobilization Day."

THE WHITE SANDS EARLESS LIZARD—Hobart M. Smith—*Field Museum*, 6 p., 10c., paper.

WORLD NEEDS FOR U. S. FOOD AND FIBER—John D. Black—*National Planning Ass'n*, 71 p., illus., 50c., paper. Planning Pamphlets Nos. 25 and 26.

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•New Machines and Gadgets•

⚙ *SLEEPING CARS especially designed for troops will soon be in service. They have a triple-deck berth arrangement, the berths being placed cross-wise. The middle and lower berths fold into comfortable daytime seats. The uppers are fixed and may be used for baggage.*

Science News Letter, December 11, 1943

⚙ *GYRO TRACK recorder cars, attached to a railroad train, make a continuous record of the track condition. Eight pens record on a moving tape irregularities in curvature, alignment, surface variations and other faults in the tracks. The rate at which the tape moves is in direct ratio to the speed of the train.*

Science News Letter, December 11, 1943

⚙ *ARMORED motor vehicles now in production for the Army are designed after exhaustive studies of the turtle's protective shell. The "firestreaming" design is expected to shed missiles as effectively as the turtle's shell sheds a horse's foot.*

Science News Letter, December 11, 1943

⚙ *FIBER combination disks containing an abrasive are manufactured for polishing metal surfaces before paint or lacquer is applied. Cotton-drills cloth glued to vulcanized fiber, and aluminum oxide grains for the abrasive, constitute the make-up.*

Science News Letter, December 11, 1943

⚙ *MUSICAL instruments, of tough plastic, such as the one the boy in the picture is playing, are furnished to soldiers overseas. One such instrument, called a-tonette, has a range over an octave, and little or no skill is needed to play it.*

Science News Letter, December 11, 1943

⚙ *DECONTAMINATING Army trucks, designed to spray neutralizing chemical solutions on gassed areas, are used also to carry water, as auxiliary fire equipment and as portable shower baths for dusty soldiers. The 2½-ton truck with power decontaminating equipment looks like an ordinary tree sprayer.*

Science News Letter, December 11, 1943

⚙ *FLASHLIGHT with featherweight storage batteries gives 2,400 hours of steady light, casting a 1,000-foot beam before becoming depleted. To be recharged this. 4½-pound flashlight is simply plugged into a cigar lighter in any automobile.*

Science News Letter, December 11, 1943

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 186.

Stocking Presents

➤ THE *SNL* editorial staff has a suggestion about presents, immediately available, for placing in stockings at the Christmas chimney for all ages and both sexes.

As all *SNL* readers *should* know THINGS of science, packets of interesting and timely specimens of new or important scientific and technical things, are issued each month at $4 per year membership fee. Each packet tells of a dozen or more experiments to be performed.

There are now on hand extra quantities of some of the most interesting and informative THINGS on:

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